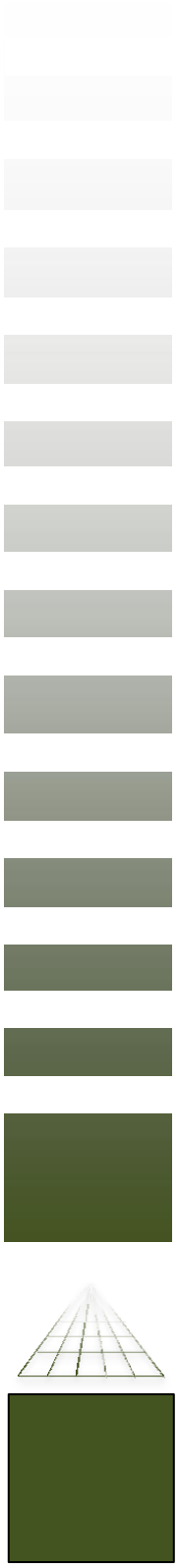
EXHIBIT 62



Sullivan v. Saint-Gobain Performance Plastics Corp.: Rebuttal and Supplemental Report Regarding Class Certification

Prepared for:
Langrock, Sperry & Wool, LLP
PO Drawer 351
Middlebury, Vermont 05753-0351

Prepared by:
IES, Inc.
104 Eton Lane
Manlius, New York 13104

01 August 2018

Summary of Qualifications

In addition to the qualifications summarized in my class certification report, I have recently been elected as the current Vice President and President Elect of the Geological Society of America, an international professional geological organization with 25,000 professional members.

I reserve the right to supplement this report and the professional opinions contained herein upon review of additional or supplemental information or data.

My fees are $300/hr for my time in study and testimony in this case.

Donald Siegel, Ph.D.
Professor of Hydrogeology

1.0 Introduction

1.1 Rebuttal to Expert Morrissey and Chinkin Reports

I prepared two reports regarding the source and distribution of poly-and perfluoroakyl substance (PFAs) in the soil and groundwater of North Bennington and Bennington Vermont ("Bennington area"). The first report, "*Perfluorooctanoic Acid (PFOA) Contamination in Groundwater in North Bennington, Vermon*t" dated 1 September 2017 (IES, 2017a), and "*Sullivan v. Saint-Gobain Performance Plastics: Expert Report on the Merits"*, dated 15 December 2017 (IES, 2017b). The two reports demonstrate that the operations of Chemfab/Saint-Gobain Performance Plastics are the sole source of Perfluorooctanoic Acid ("PFOA") in the soil and groundwater of the Zone of Contamination in the North Bennington/Bennington area. The reports show that PFOA released through air emissions from the Chemfab/Saint-Gobain operations spread throughout the Bennington area on prevailing winds where they deposited on the ground during precipitation events eventually reaching groundwater and residential water supply wells.

A report prepared by Daniel J. Morrissey of McDonald-Morrissey Associates (MMA) on 5 May 2018 (Morrissey, 2018) on behalf of Saint-Gobain, challenges some of my opinions and presents conclusions that contradict the scientific facts of the matter. In this report, I respond to Morrissey's opinions. However, on one point we both agree: available data and information show that operations at the former Chemfab/Saint-Gobain facilities in the Bennington/North Bennington area were the source of PFOA in groundwater at "certain locations." Based upon all of the data and information, my opinion stands that the certain locations include the entire Zone of Contamination in Bennington and North Bennington.

I also offer a review and rebuttal to the "Expert Report of Lyle R. Chinkin" prepared on behalf of Saint-Gobain in which he offers speculative opinions about other sources of PFOA groundwater contamination in Bennington and North Bennington, Vermont.

1.2 Introduction of Supplemental Data

Subsequent to my preparation and submission of the Class Certification and Merit Reports (IES, 2017a and 2017b), additional data and information have become available related to the distribution and concentrations of PFAS in soil and groundwater in the North Bennington/Bennington Area.

New soil and groundwater data were compiled and released in the following reports:

1. Draft Interim Conceptual Site Model Site Investigation Report: Bennington, Vermont, dated 15 December 2017 (Barr, 2017b)
2. Draft Interim Conceptual Site Model Site Investigation Report: Bennington, Vermont: Prepared for Saint-Gobain Performance Plastics, February 2018
3. Conceptual Site Model Site Investigation Report: Bennington, Vermont" dated, March 2018 (Barr, 2018a);
4. Water Street Site Investigation Report, dated June 2018 (Barr, 2018b);
5. "Perfluoroalkyl Substances (PFAS) Contamination Status Report", dated July 2018 (VT-DEC, 2018a).
6. Updated Zone of Contamination Map, dated 30 May 2018 (Vermont Department of Environmental Conservation ("VT-DEC"), 2018b): https://anrweb.vt.gov/PubDocs/DEC/PFOA/Maps/CROMEST-HighestConcentrationCAA-06212018.pdf
7. Age dating of ground water in the North Bennington area by the United States Geological Survey (USGS) and presented at the 2018 Northeast Geological Society of America (NE-GSA) annual meeting in Burlington, Vermont, 18-20 March 2018.
8. VT-DEC Groundwater Database for Combined Water Supply, 3 March 2018 (VT-DEC, 2018c).

I have considered and have relied upon these data and information in this report.

2.0 Morrissey Opinions

2.1 Morrissey Opinion No. 1:

"Available data and information show that operations at the former Chemfab/Saint-Gobain facilities in the Bennington/North Bennington area were a source of PFOA in groundwater at certain locations."

I agree with Mr. Morrissey that available data and information show that operations at the former Chemfab/Saint-Gobain facilities in the Bennington/North Bennington area were the source of PFOA in groundwater. But Mr. Morrissey does not express any opinion about the specific "certain" locations at which he believes PFOA released from the former Chemfab/Saint-Gobain facilities contaminated groundwater. Morrissey does present a map similar to the one I produced from the VT-DEC showing the distribution of PFOA from Chemfab/Saint-Gobain's Water Street plant (Morrissey, 2018; Figure 6). Morrissey's Figure 6 is annotated and presented as Figure 1 of this report. Similar to the VT-DEC maps, Morrissey's figure clearly shows a PFOA groundwater plume that originates (area with highest concentration) near the Chemfab/Saint-Gobain Water Street plant, which then systematically decreases in concentration the greater the distance to the east. One only needs to look at the map to see the change in icon colors (Morrissey's used a colored circle to represent groundwater concentrations) from mostly purple and red (50 to >1,000 ppt) near the Chemfab/Saint-Gobain Water street plant, to orange, yellow and green moving from west to east.

Upon close examination, there is one green circle (20-70 ppt) near the Water Street plant, the rest are purple (> 1,000 ppt), red (500-1,000 ppt) and orange (250-500 ppt). With the exception of one orange circle, the area near the Former Bennington Landfill consists of yellow circles (70-200 ppt) and green circles located east of the landfill. Noticeably absent, are the colors purple, red, and orange anywhere near the Former Bennington Landfill. If the Former Bennington Landfill were a source of PFOA, there would be purple, red, and orange colored circles representing greater concentrations in or near the landfill. The distribution of yellow, green,

and brown (<20 ppt) circles in the vicinity of the landfill are exactly what one would expect this far from the Water Street source and are consistent with concentrations in this area of the plume. The distribution of PFOA is consistent with the dominant wind patterns as shown in Mr. Yoder's report (Yoder, 2017).

2.1.1 Air Dispersion Models and Distribution of Ground Water Contamination

Mr. Yoder (Yoder, 2017), VT-DEC (2016) and Saint-Gobain's consultant, Barr Engineering (Barr, 2017), independently prepared air dispersion and deposition models for PFOA emitted from Chemfab/Saint-Gobain plants (Figure 2). All model results show that PFOA dispersed through the air in North Bennington/Bennington from approximately west to east and continued across the Bennington Landfill, which pattern agrees with the PFOA distribution in groundwater. The Vermont DEC shares my opinion that the Chemfab/Saint-Gobain plants were the sole source of the PFOA contamination throughout the area of groundwater contamination identified by the VT-DEC as Corrective Action Area (CAA 1) and (CAA-2). Yet, while Saint-Gobain has accepted responsibility for the PFOA in the western half of the Zone of Contamination in the 2017 Consent Order, it continues to contest responsibility for the eastern half of the Zone despite the fact that the data simply do not show a source area near the Former Bennington Landfill.

2.1.2 Extent of the Groundwater Contamination

The most current extent of the PFOA contaminated wells is shown in the recent map produced by the Vermont DEC, which has not changed the Zone of Contamination (VT-DEC, 2018b). The northern, southern and western boundaries are defined by non-detect well results. If storms uniformly deposited PFOA compounds on the ground from unknown distant locations, as alleged in Mr. Lyle Chinkin's expert report (Chinkin, 2018), the non-detects marking the contamination edges of the Zone of Contamination would not occur and PFOA would be found uniformly both inside and outside the Zone. The extent of well contamination to the east has been delineated by Vermont DEC based on the presence of PFOA in wells, but we cannot not

exclude groundwater contamination beyond the eastern boundary because there are no wells to sample. Most of the area to the east outside of the Town of Bennington is part of the Green Mountain National Forest owned by the United States. (See Vermont Interactive Map View, Vermont Center for Geographic Information, http://maps.vermont.gov/vcgi/html5viewer/?viewer=vtmapviewer.)

2.1.3 Aquifer Heterogeneity and Plume Stability

With respect to the numbers of wells contaminated with PFOA (Morrissey, 2018, p.10), Mr. Morrissey states, "Of the 1,087 samples that were analyzed for PFOA, 756 were below the Vermont drinking water advisory limit of 20 ppt, and 462 of those samples had no detectable levels of PFOA." Taken at face value, one would interpret Mr. Morrissey's presentation of the data to mean only 30.4% of the drinking water supply wells in the North Bennington/Bennington area are contaminated with PFOA above Vermont drinking water standards. This is far from true and not a fair representation of the facts. His statement represents numbers of samples, not numbers of wells. Some non-detect wells have been sampled more than once. Mr. Morrissey relied on the VT-DEC October 2017 spreadsheet, which actually showed that 592 wells were sampled as of that date, of which 280 (47.3%), nearly half, were above drinking water standards and PFOA was detected in 381 wells (64.3%) of the wells sampled (Table 1).

Table 1[1] - VT-DEC Residential Well Data Through October 2017

Summary	PFOA
Total Wells with Detections	381
Total Wells ND Results	211
Total Wells <20 ppt	101
Total Wells >20 ppt	280
Total Well Results Received	592

[1] VT-DEC GW Data Sampling Combined Water Supply_10/2017.xlsx (Morrissey, 2018)

The wells were re-sampled in March of 2018. At that time PFOA was detected in 352 of the 556 (63.3%) wells sampled had detectable levels of PFOA and 272 (48.9%) wells exceeded the Vermont drinking water standard.

Table 2[2] - VT-DEC Residential Well Data March 2018

Summary	PFOA
Total Wells with Detections	352
Total Wells ND Results	204
Total Wells <20 ppt	80
Total Wells >20 ppt	272
Total Well Results Received	556

[2] 2017.0323.Combined Water Supply (VT-ANR, 2018d)

2.2 Morrissey Opinion No. 3 and No. 4:

> "*Calculations presented by Dr. Siegel to determine PFOA concentrations in groundwater, which were then used to justify an annual PFOA emission rate of 1,000 pounds per year from the ChemFab/Saint-Gobain Water Street Plant, are conceptually incorrect and scientifically unreliable.*"
>
> "*Calculations presented by Dr. Siegel cannot be used to reliably predict PFOA concentrations at individual private wells at any specific location, nor can they be used to rule out other potential sources of PFOA that may be contributing to observed levels".*

I respond to these two comments collectively since they overlap. Mr. Morrissey criticized my calculations as scientifically unreliable. To the contrary, my calculations are well suited for the purposes for which they were intended: 1) to test the degree to which the Bennington/North Bennington landscape and soil are vulnerable to the deposition of PFOA from air emissions; 2) to calculate the time for PFOA to travel from the surface to the water table; 3) to calculate PFOA contaminant concentrations in the groundwater aquifers based upon air deposition; and, 4) determine the sensitivity of deposition rates with respect to observed groundwater concentrations.

I did not do any calculations to predict the levels of PFOA in any specific well at any specific location. I chose broad locations for the calculations because they represent typical hydrogeological conditions that are encountered throughout the contaminated plume area. Calculations in my Class Certification Report (IES, 2017b) *generically* presented a scenario for the contamination of the bedrock aquifer located east of the Chemfab/Saint-Gobain-Water Street plant and a scenario for the contamination of the area southwest of the Bennington Landfill where sand and gravel aquifers are present in the Walloomsac River Valley. Sand and gravel wells occur near the landfill but also in other locations (Figure 3). My calculations show: 1) how PFOA from air deposition traveled to both bedrock and sand and gravel aquifers *wherever they are found in the Zone of Contamination;* and, 2) how long it took the contamination of groundwater to occur once the soils were contaminated.

I wrote in my Class Certification Report:

> *"Instead of using a complex mathematical model for PFOA transport through soils at North Bennington, for which we have minimal local data of all kinds to constrain, I used a scientifically accepted one-dimensional steady state screening approach (Rao and others, 1985, cited e.g. by Alley, 1993; Bevin and Germain, 2013); to estimate how long it would take PFOA deposited on the land surface to reach the water table. The National Academy of Science (NAS, 1984) highlighted this model as a suitable screening tool to characterize the movement of pesticides and other contaminants through soil given the uncertainty of how contaminants move through the unsaturated zone."*

A widely accepted and cited numerical solution to assessing groundwater vulnerability to specific contaminants was presented by Rao et al. (1985). Indeed, I cited a National Academy of Sciences white paper report dealing with the inherent vulnerability of aquifers to surface contamination that highlighted the Rao approach. The Rao method can be used for *any compound* with respect to vulnerability of hydrogeologic systems to contamination on the landscape and soil--inorganic as well as organic compounds. I have used it myself in my consulting to assess whether pesticide application to the land surface could lead to subsurface groundwater contamination. It makes no difference however, that I have not applied it to PFOA in the past. The approach works for all contaminants.

It is irrelevant that my citations in my Class Certification Report (Alley, 1993, and Bevin and Germain, 2013) did not directly mention that the Rao approach estimates the timing for the contamination mass load to reach the water table and the concentrations of contaminant in the groundwater thereafter—it was designed to do this and these details are implied in any critique of it.

2.2.1 PFOA Contamination Pathway

From first observations and from a broad understanding, as a hydrogeologist familiar with thousands of groundwater contamination plumes, the distribution of soil and groundwater contamination in the North Bennington/Bennington area shows that the presence of a second

PFOA source makes no sense scientifically. As a matter of first principles, soil and groundwater contamination is greatest in close proximity to the contaminant source and diminish with distance away from the source (e.g. Freeze and Cherry 1979).

In summary, Figure 4 shows a conceptual representation of what happened when PFOA was emitted to the atmosphere from Chemfab/Saint-Gobain. PFOA released to the air falls to the ground as particulates and during precipitation events where the PFOA mixes with soil. Like tap water passing through ground coffee in a coffee maker, infiltrating precipitation dissolves the PFOA and carries it vertically downward where it encounters and mixes with groundwater. The combination of soil composition, porosity and thickness, as well as, local heterogeneity and fracture connectivity define locally where and how PFOA contamination will disperse.

The distribution of PFOA in the groundwater plume is consistent with contaminant plumes in groundwater resulting from atmospheric deposition. For example, Shin (2011, 2012) shows diminishing concentrations of PFOA with distance from the location of the PFOA air emissions at the DuPont Washington Works plant in Parkersburg, West Virginia, which were analogous to the Chemfab/Saint-Gobain airborne sources. Defendant has not provided any data or information to support the presence of any additional sources of PFOA other than Chemfab/Saint-Gobain. It is more likely than not that Chemfab/Saint-Gobain individually created the PFOA groundwater plume with its head at Chemfab/Saint-Gobain at Water Street and trending miles to the east. Neither I nor the Vermont DEC have seen any data suggesting even minor plumes of PFOA in groundwater migrating away from any of the “potential” minor sources of PFOA (Vermont DEC, 2018).

There are transient changes in PFOA concentrations in some wells throughout the North Bennington/Bennington area. Concentrations vary from the detectable concentrations of PFOA to non-detect between sample intervals. The variability of PFOA concentrations in some wells within the Zone of Contamination is related to local conditions, the complex hydrogeology of the region, and heterogeneity in the groundwater flow system. Wells within the plume without

current detectable levels of PFOA now will likely be contaminated in the future. I reviewed the VT-DEC Groundwater Database for Combined Water Supply and found that where wells were sampled more than twice, concentrations remained the same, increased or decreased at about the same proportions (VT-DEC, 2018c).

My calculations support that PFOA from Chemfab/Saint-Gobain migrated into the groundwater in a manner consistent with *the actual observed broad pattern of contamination* in the Zone of Contamination emanating from the Water Street plant and being distributed in the predominant wind directions. The only disagreement expressed by Mr. Morrissey is the extent of the migration.

My calculations show that PFOA deposition on the order of 0.1 mg/m^2/yr to 1.0 mg/m^2/yr would lead to the observed concentrations PFOA in groundwater at levels greater than 20 ppt. These deposition levels occur from emission rates around 1,000 pounds a year or more, based on Yoder's (2016) air modeling.

Morrissey proposes no alternative methodology, but he implies that a more deterministic mathematical approach would be more valid (Morrissey, 2018). Since there literally are no measured data on the specific pathways through which water moves through soil in North Bennington/Bennington, nor soil moisture profiles, subsurface fracture connectivity, porosity and distribution or soils properties other than local organic matter (Male, 2017, Barr, 2018), it would be illusionary to attempt to use more deterministic mathematical approaches wherein dozens of parameters have to be assumed or defaulted to out of necessity.

In my professional career, I have prepared and published many complex deterministic numerical models of groundwater flow and transport, and I concur with Voss (2011a,b) that simplicity is a more appropriate approach. Simplicity, in this case means working with a limited number of known, or easily estimated, system controlling parameters as opposed to feigning accuracy by estimating many system modulating parameters. It is a more appropriate approach

to evaluate groundwater problems lacking a high density of specific aquifer properties data to focus on the available and known parameters of the area. Straightforward approaches are preferred to evaluate contaminant movement and travel time in complex settings compared to complicated approaches that have to assume or estimate dozens of values for unknown parameters. The more complicated approaches are more appropriate for predicting contaminant concentrations in water from municipal well centers that induce large volumes of water flow from the ground (Shin, 2011, 2012) and in the process, override heterogeneities in the natural flow system that may otherwise move water and contamination to different places.

I address Morrissey's other arguments about my specific assumptions one by one:

Morrissey asserts:

> "One of the major findings that has resulted from these investigations is that the ultimate location of the source water for a well can be distant from the well, as conceptually depicted by Figure 12 and acknowledged by Dr. Siegel in his deposition (Siegel Dep., P. 90). (p. 14.)"

I agree that groundwater hypothetically can move to wells in fractured rock from some distance away but note that the "major findings" reported by Morrissey are for studies on fracture hydrology in general, not in the Bennington area specifically. Here, given the hydrologic uncertainties, there are two scenarios that bracket the likely possibilities. The first would be a fracture near the top of the bedrock where the groundwater becomes heavily contaminated from atmospheric deposition of PFOA as it passes vertically through the soil column above, discharges to a bore, and then becomes diluted by cleaner water from deeper fractures tapping water at places away from the well. The other scenario would be fractures at depth that deliver PFOA contaminated groundwater from the plume away from a home and then this water mixes with cleaner water at the top of the home's well bore. In either case, water mixes in the well bore. It makes no difference, when addressing the broad question of where the PFOA contamination came from in the plume area in North Bennington, particularly in light of no evidence of alternative sources for PFOA other than Chemfab/Saint-Gobain, and the very

configuration of the plume itself, which is commensurate with simple transport of PFOA from the stacks at the Water Street plant with the wind patterns.

> Morrissey asserts:
>
> "Groundwater flow in the saturated zone, below the water table, is predominantly horizontal and tends to move in parallel paths with little mixing between layers." (p. 7-8)

Morrissey is wrong to assert that groundwater moves mostly horizontally in the fractured rock setting of North Bennington. These rocks contain faults and folds and no longer maintain their essential original horizontality such that water will move in them mostly horizontally. Wherever there is downward flow, PFOA will move from the water table deep into the flow system, even without pumping wells to enhance vertical movement downward. Given the proper hydrogeologic setting, such as near major faults, artesian wells naturally flow at the land surface in North Bennington from vertical movement of water upward in open well bores (Figure 5).

Finally, I address specific comments by Morrissey about calculations I presented in my Class and Merit reports:

> *"The calculations are poorly documented and appear to be applied inconsistently when comparing Dr. Siegel's expert reports. In some cases, the supporting materials differ significantly from the results that Dr. Siegel reports, without any explanation of the gaps and inconsistencies."*

Specific examples of inconsistency include the following:

> *"In describing his calculation of PFOA travel time through the unsaturated zone, Dr. Siegel presents several different results that conflict and are not reconciled:*
>
> > *1. PFOA would travel to the water table in less than ten years in the Bennington/North Bennington area, except where the water table is deeper than 35 feet, where travel time would be longer (IES, 2017a, P. 6-3);"*

It is true, in general, that the deeper the water table the longer it will take contamination from the ground surface to percolate down to the water table. I calculated as a *representative example* about 6 years which is less than 10 years.

> *"2. PFOA would travel to the water table in approximately six years, according to an input variable in calculations of PFOA concentration in ground water (IES, 2017a, P. 6-p. 17 and spreadsheet titled "Calculus model for PFOA 103017.xlsx", tabs labeled "ROCK PFOA" and "S&G PFOA");"*

I calculated it would take about 6 years in my representative calculation.

> *"3. PFOA would travel to the water table in two to six years based on a range of parameter values selected by Dr. Siegel (IES, 2017b, P. 3-3);*
>
> *4. PFOA would travel to the water table in an average of five years in the Bennington/North Bennington area (IES, 2017b, P. 3-3);"*

And

> *"5. PFOA would travel to the water table in approximately ten years in a clayey soil example provided by Dr. Siegel (IES, 2017b, P. 3-4);"*

I address these calculations in my Rebuttal Report on the Merits.

> *6. PFOA would travel to the water table in approximately 10.3 years in calculation details presented by Dr. Siegel (spreadsheet titled "EH DS 08 30 Modeling.xls", tab labeled "Rao model for Bedrock"). P. 18*

Given the assumptions in this spreadsheet example, I agree with this statement and the timeframe is, as I stated, about 10 years.

> *"With regard to his calculation of PFOA concentration in ground water east of Water Street, Dr. Siegel identified different PFOA deposition rate inputs that conflict and are not reconciled:*
>
> *1. In his class certification report Dr. Siegel cites a value of 3 milligrams per square meter per year (mg/m^2/yr) derived from Yoder (2017) model results (IES, 2017a, P. 6-4); and*
>
> *2. In his supporting spreadsheet Dr. Siegel uses a value of 1.5 mg/m^2/yr (spreadsheet titled "Calculus model for PFOA 103017.xlsx", tab labeled "ROCK PFOA")."*

I used multiple deposition rates to explore how the hydrogeologic system would behave and I provided a representative spreadsheet. I explored many variations on the common theme of testing the model parameters within plausible ranges from the literature and from estimates of PFOA emissions, however I did not save most spreadsheets reflecting the calculations, given the

simplicity of the approach of only having to change a single cell in my spreadsheet for each calculation. I did not provide a separate spreadsheet for every calculation represented in my report, but the spreadsheets provided show representative calculations.

> *"Similarly, with regard to his calculation of PFOA concentration in ground water near the Landfill, Dr. Siegel presents different results that are not reconciled:*
>
> > *1. In his class certification report Dr. Siegel predicts a PFOA concentration in Ground water of approximately 24 ppt near the Landfill (IES, 2017a, P. 6-5);*
> >
> > *2. In his supporting spreadsheet he calculates a range of concentration from 132 ppt to 192 ppt near the Landfill (spreadsheet titled "Calculus model for PFOA 103017.xlsx", tab labeled "S&G PFOA").*"

This was a typographic error inadvertently missed during my proof-reading of my report. For the case of sand and gravel, using the input data I presented in my spreadsheet (0.18 $mg/m^2.yr.$) the results generally agreed with PFOA concentrations observed in sand and gravel wells west of the landfill, over 100 ppt (Figure 5).

At my deposition, I was asked to draw a circle on a small map showing where my calculations were done near the landfill. I drew it, inadvertently, west of where bedrock wells mostly occur. I meant to point southwest of the landfill. But in either case, sand and gravel wells are located in both places among the bedrock ones (Figure 3).

2.3 Morrissey Opinion No. 5:

> *"Calculations presented by Dr. Siegel that were used to determine the amount of time it would take for PFOA in groundwater to reach levels below 20 parts per trillion (20 ng/L) in the Bennington/North Bennington area are incorrect and scientifically unreliable. The amount of time it will take for groundwater to be free of PFOA in the Bennington/North Bennington area will vary substantially from location to location."*

Ultimately, the aquifers under the Bennington area will flush themselves of PFOA. The question is how long this flushing will take. In my Class Certification Report, I presented a mass balance calculation over the Zone of Contamination as the best means to determine the length of time for this flushing to occur to the point where, in general, the levels are reduced to below 20 ppt. I agree that the time will vary from location to location, but the time will be at least decades to completely decrease PFOA to below 20 ppt throughout the area. Mr. Morrissey does not propose an appropriate calculation for arriving at a contrary opinion.

I also assumed that no PFOA diffused into non-active pore spaces to later diffuse back into the active groundwater system, once the main body of PFOA has been displaced by recharge. The back diffusion of stored contamination is well known and cited as a major unknown in VT-DEC's critique of Barr (2017) (VTDEC 2017, comment 49). Consequently, my calculations provide a *minimum time* for how long it would take for PFOA to leave the contaminated area by flushing alone.

I never tried to determine how long it would take *at any particular location* for concentrations to drop below 20 ppt, as Morrissey suggests. My approach speaks to *the entire resource*, not any particular well location. The current data set for multiple PFOA sampling events on the VT-DEC website shows that some wells have about the same concentrations of PFOA in their water from one sample to the next, some wells have concentrations that decrease, some have concentrations that go up and down by small amounts, and some increase or decrease by an order of magnitude or more. Local heterogeneity in both hydrogeology and hydrologic drivers for PFOA movement makes it difficult to use the well data collected over such a short time

frame (2.5 years) as a guide to the future for PFOA flushing from the aquifers. The data do not show a reliable trend over such a short period, which is in itself indication of the long timeframe that will be necessary for reduction of PFOA concentrations.

In my Class Certification Report I used a simple mass balance approach, based on estimation of the mass of PFOA in the aquifers and the loss of PFOA from the aquifers to the Walloomsac River, to determine if it would take a matter of years, decades or centuries for the aquifer to be flushed of PFOA by natural processes. Mr. Morrissey pointed out an error in my calculation of the mass of PFOA in the aquifers, which happened because of a mathematical error in an Excel spreadsheet cell. I corrected this error and also changed my boundaries of the contamination levels to be consistent with the approach used by the VT-DEC. (Figure 5). I kept a representative aquifer thickness of 300 feet and an average active porosity of 0.10 percent, which is between that for sand and gravel and fractured rock.

The fracture porosity of bedrock is about 0.03 (see references cited in my Class Certification and Merit Reports), whereas the porosity of sand and gravel is on the order of 0.20-0.40 (Freeze and Cherry, 1979). I chose 0.20 for sand and gravel and determined from the Surficial Geological Map of the Bennington Area that approximately 75% of the plume is underlain by bedrock (Figure 6). While the aquifers have variable thicknesses, variable fracture densities and different types of layered materials, my calculation provides a reasonably conservative measure of how long it will take for the aquifers to completely flush. No matter how one varies the aquifer parameters within reasonable ranges, it will take decades for all the PFOA to be removed from the groundwater naturally by dilution and displacement (Figure 7).

The U.S. Geological Survey (Shanley et al., 2018) recently directly measured the age of PFOA contaminated water along west to east transect starting at the Chemfab/Saint-Gobain Water Street Plant. Contaminated water ranges from about 5 years old near the Water Street Plant to about 100 years old elsewhere where contamination concentrations are at or below detection limits (Figure 8). The U.S. Geological Survey found the average age of most of the contaminated

water ranges from 20-30 years old, which means recharge water has not flushed out PFOA within this amount of time--otherwise, the PFOA would not be in the water! This supports a time of at least decades for the most contaminated water to reach low concentrations. The highest concentrations of PFOA were associated with an age of only 5 years, which therefore supports a PFOA source still contributing to the ground water near the Chemfab/Saint-Gobain plant on Water Street (Shanley, 2018).

2.4 Morrissey Opinion No. 6:

> *"The former Bennington Landfill (referred to herein as the Landfill) is a source of PFOA in groundwater occurring in bedrock beneath the Landfill and therefore, is a possible source of PFOA in domestic wells near the Landfill. Dr. Siegel's opinion that the Landfill is not a plausible source of PFOA in nearby domestic wells is not supported by available data*."

Morrissey argues that a groundwater mound on the southwestern part of the Bennington Landfill speaks to possible flow paths from under the landfill circumstantially spreading PFOA to wells in bedrock located thousands of feet to the southwest. Additionally, Barr (2017 and 2018) attempted to use agglomerative-hierarchical cluster analysis to hypothesize that minute concentrations non-PFOA PFAS compounds in soils and groundwater show transport from the Bennington Landfill area to the southwest. A review of Figure 1, adapted from Figure 6 (Morrissey, 2018), shows that the concentration of PFOA in the cluster of domestic wells southwest of the landfill fall in a trend directly commensurate and consistent with the groundwater plume created by atmospheric deposition from the Chemfab/Saint-Gobain PFOA Water Street plant. The concentrations of PFOA identified in monitoring wells at the landfill and between the landfill and the area to the southwest also fall into the same trend.

The PFOA in water southwest of the landfill did not come from the landfill. All groundwater samples collected from within the landfill study area show concentrations commensurate with the Chemfab/Saint-Gobain plume. The monitoring well installed by Barr located between the landfill study area and the cluster of residential wells located to the southwest, SG3-MW17-BR3, has a lower PFOA concentration than the monitoring wells at the landfill. In fact, if all of the monitoring wells located at the landfill were plotted on Figure 1 of this report or Figure 6 of the Morrissey report (Morrissey, 2018), all concentrations would be represented by yellow and green circles.

The fact that PFOA was found at ~4,500 ppt in a water sample collected from the decommissioned leachate collection vault of the Bennington Landfill is irrelevant to the claimed

migration of PFOA to residential wells to the southwest. The vault collects leachate in a man-made water-proof structure and is not a source for contamination. Barr's consistent juxtaposition of the vault data with the groundwater data is disingenuous, at best, and appears intended to deceive. There is no interaction between the leachate collection vault and groundwater.

There are *other contaminants* from the Bennington Landfill, which were detected in monitoring wells near the landfill, in the decommissioned leachate collection vault, and in downgradient monitoring wells to the southeast, particularly volatile organic compounds (VOCs) (e.g. Dames and Moore, 1998). These VOCs have not been found in groundwater in the cluster of residential wells located southwest of the Bennington Landfill commensurate to what would be expected if the landfill leachate was migrating in this direction. Barr's new bedrock monitoring well SG-MW17-BR-3, located *southwest* of new bedrock well SG-MW17-BR2, also did not contain VOCs (Barr, 2018, Table 3.13). But, SG-MW17-BR4 located *southeast* of the landfill *did* have VOCs, commensurate with what would be expected from landfill leachate contamination. SG-MW17-BR2, located adjacent to the southwestern edge of the landfill cap contained one VOC, xylene, in a location where Barr (2018) argues sewage sludge was disposed of outside of the current landfill cap and where a groundwater mound may now occur. Most of all, PFOA and minor PFAS compounds cannot be used as *unique* tracers for the migration of landfill leachate *in the absence of other landfill leachate indicators* to distinguish landfill contamination from the known atmospheric source of PFOA and probably other PFAS from Chemfab/Saint-Gobain air emissions. Three separate and independently conducted air dispersion models (including one model prepared on behalf of Saint-Gobain) demonstrate that PFOA from Chemfab/ Saint-Gobain stacks blanketed North Bennington/Bennington including the area of the Bennington Landfill with PFOA.

Morrissey argues that a ground water mound on the southwestern part of the landfill speaks to possible flow paths potentially spreading PFOA to the cluster of domestic wells located thousands of feet of southwest of the landfill. Morrissey relies on Barr's *suggested* (by dotted lines for water level contours) groundwater mound approximately centered on a single bedrock

monitoring well SG-MW17-BR2 located at the edge of the landfill. The water level measured in SG-MW17-BR2 is unusually high in comparison to the water levels measured in adjacent wells. The groundwater mound as observed could be artificial, caused by domestic wells being pumped in homes west and southwest of the landfill, lowering the potentiometric surface sufficient to artificially develop a mound because recharge cannot occur under the landfill to the east due to the impervious cap. Water levels in some domestic wells monitored by Barr (2018) dropped tens of feet when the wells were pumping, whereas others changed little with pumping and responded almost immediately to precipitation.

2.5 Other Potential Sources of PFAS

2.5.1 Introduction

As stated in my Class Certification and Merits reports, I find no credible alternative source or sources for the PFOA found in the soil, sediment, surface water or groundwater in the North Bennington/Bennington area, other than Chemfab/Saint-Gobain. At my direction, Mr. Edward Hinchey, P.G., of IES conducted an extensive review of publically available historic records for chemical use and release in the North Bennington/Bennington area. IES employed a professional environmental database company, EDR, Inc., to acquire available records of past use and/or release of hazardous chemicals. Mr. Hinchey reviewed all available reports at known contaminated properties in the North Bennington/Bennington area and reviewed the administrative and technical records of the investigations at the Bennington and Burgess Landfills. IES did not identify *any other* commercial, agricultural or industrial users of PFOA and other PFAS other than Chemfab/Saint-Gobain Performance Plastics.

Information obtained from the VT-DEC indicated that one manufacturing facility, Eveready Battery Company, Inc., may have used small amounts of Teflon™ materials in one of its manufacturing process. Groundwater samples were collected from existing monitoring wells at and near the Eveready factory in Bennington by the VT-DEC. PFOA was found in very low

concentrations in the existing monitoring wells located directly down gradient of the manufacturing facility. The VT-DEC concluded that PFOA found in these wells is likely from other sources in the Bennington area, most likely the Chemfab/Saint-Gobain plants (VT-DEC, 2018).

The Vermont Agency of Natural Resources (VT ANR) conducted an internal investigation of their own files and records, particularly from the air permitting and engineering services program, and did not find any evidence or records that suggest other businesses or industries emitted PFOA in the North Bennington/Bennington area (VT ANR, 2018a; VT ANR, 2018b).

2.5.2 Misrepresentations of Fact

Expert Lyle R. Chinkin is a meteorologist who states that he conducted a "desktop" investigation of other potential PFOA sources. After speculating that PFAS "have become ubiquitous in the environment", he declares, without documentation or back-up of any kind, ". . . PFAS were used extensively in the Bennington area by a broad range of industries and consumer uses." He then lists 15 presumptive sources, but provides absolutely no documentation of his own research to support his statement.

He relies extensively on two reports, Barr (2017) and Golder (2017), presented as Appendix H.1 in Barr (2018). Both the Golder and Barr reports were prepared on behalf of Saint-Gobain in an apparent attempt to deflect Saint-Gobain's responsibility for the Bennington PFOA and PFAS contamination. Both reports claim to have identified "potential sources;" however, neither report presents any evidence or documentation of any actual identified source.

Chinkin blatantly misrepresents the findings of both reports. Chinkin states, "The Draft Barr Conceptual Model Report dated June 2017 (Barr Engineering Company, 2017) identified at least eleven large contributors to PFAS in the Bennington area that disposed of waste in local landfills according to disposal records." (Chinkin, 2018, p.7). However, Barr (2107) actually states, "An

inventory of wastes disposed of at Bennington Landfill provides some insight into their waste streams and the potential for their use and/or disposal of PFAS. These industrial entities include the following: "Barr (2017, p. 9). Barr then lists 11 companies previously identified by the USEPA during the Bennington Landfill Remedial Investigation/Feasibility Study (RI/FS). Barr clearly stated that the list of eleven companies "provide insight into their waste streams." and the "potential for their use and/or disposal of PFAS." Barr (2017) did not identify any other sources. Chinkin represented Barr's original presentation of "insight" and "potential" as an "identified" fact.

Chinkin's misrepresentation of facts continued when he discussed Golder Associates, *Preliminary Evaluation to Identify Potential PFAS Sources*, (Barr, 2018; Appendix, H.1). Chinkin incorrectly states that Golder Associates ". . . identified numerous large and small sources of PFAS." (Chinkin, 2018, p. 7). In fact, Golder used the word "potential" 58 different times in their report when referring to locations that could be a "*potential source"* but did not identify any location as a documented source of PFAS.

Golder concluded their 2017 report with a section appropriately titled, "Potential Sources Summary". In their four sentence summary, Golder states the phrase, "potential sources" three times and used the word "identified" once in the following context, "Golder identified numerous . . . . facilities that may represent PFAS sources . . . " in other words, Golder concluded that they identified potential sources – but no actual sources.

Golder (2017) did not make a declaration of finding of a single actual source of PFAS released to the environment. Golder (2017) conflates the euphemism "potential sources" with an un-documented and invented indicator of potential sources they call the "sulfonate signature" (Golder, 2017, p. 5), by pointing to sulfonated perfluoroalkyl compounds, such as perfluorooctane sulfonate (PFOS) found at very low levels in some wells (much lower than PFOA). Golder then implicates innocent landowners and small business operators - by name - without contacting current or past property owners before publishing their report. A recent

commentary in VTDigger (Bond, 2018) authored by David Bond, Ph.D., suggests that by including the potential sources in the Barr report, "[Saint-Gobain] . . . is accusing our community of being complicit in PFOA contamination. Saint-Gobain veers from scientifically sound investigation and into strategic efforts to muddy the water." I agree that the report veered from scientifically sound investigation into speculation.

Plaintiffs' counsel contacted eight of the landowners identified by Golder and asked them about their activities on their property and their PFAS use. All eight property owners signed declarations contradicting Golder's characterization of their use of their property and stating that they do not currently use, or have ever in the past used PFAS compounds on their property (Vermont Property Owners Declarations, 2018, attached as Exhibit A).

Barr identified that one of its five specific investigation objectives was to "identify some of the other potential sources of PFAs". Barr further states in Section 4.4 of their report that a, "primary objective of the investigation was to identify some of the other potential sources of PFAs within the investigation area" (Barr, 2018, Section 4.4, p. 48). Despite being one its stated primary objectives, Barr did not identify and document any additional sources of PFOA to the environment.

2.5.3 Sulfonated PFAS at the Water Street Plant

Reports prepared on behalf of Saint-Gobain (e.g. Barr 20017, 2018a; Golder 2017; Chinkin, 2018) state that Chemfab/Saint-Gobain never used sulfonated PFAS, such as PFOS, at the Water Street Plant. This assertion was the basis of the Barr and Golder attempts to assign responsibility to others for PFOA contamination where there were also low levels of sulfonated PFAS found. The recently completed site investigation at the Chemfab/Saint-Gobain Water Street plant has proven this assertion to be untrue. (Barr, June 2018b). Barr found sulfonated PFAS, such as PFOS, in onsite sewer and sump samples; soil; groundwater; and in residue (dirt piles) and wipe samples throughout the site. Specifically, PFOS was found in air

emission stack residue samples at concentrations up to 1,500 ng/g. The presence of PFOS in diverse media and in air emission stacks indicates that PFOS was used and likely released at the Chemfab/Saint-Gobain Water Street plant. The use of at least one sulfonated perfluoroalkyl compound at the facility was corroborated by the signed declaration of former employee Bruce Knapp (Knapp, 2018, attached as Exhibit B).

2.5.4 Chemfab/Saint-Gobain's Connection to PFOA in the Bennington Landfill

Chemfab/Saint-Gobain is the only party known to have disposed of waste from a process using PFOA in the Bennington Landfill. If any PFOA has migrated from the landfill to domestic wells in the area, Chemfab/Saint-Gobain is the only known source. Chemfab admits to disposing of waste dispersion sludge at the Bennington Landfill (Barr, 2017; Chemfab, 1990; Chemfab, 1994a; and Chemfab 1994b). The disposal of Chemfab Teflon™ dispersion sludge waste at the Bennington Landfill is corroborated by the signed declaration of former employee Bruce Knapp (Knapp, 2018) and communications between Chemfab and the USEPA (Chemfab, 1990; Chemfab, 1994a; and Chemfab 1994b).

References

Alley, W.M. ed., 1993. Regional ground-water quality. John Wiley & Sons, pp. 635

Barr Engineering, 2017, Draft Conceptual Site Model Site Investigation Report: Bennington, Vermont: Prepared for Saint-Gobain Performance Plastics, December, 2017

Barr Engineering, 2018a, Draft Interim Conceptual Site Model Site Investigation Report: Bennington, Vermont: Prepared for Saint-Gobain Performance Plastics, February, 2018

Barr Engineering, 2018b, Conceptual Site Model Site Investigation Report: Bennington, Vermont: Prepared for Saint-Gobain Performance Plastics, March 2018.

Barr Engineering, 2018c, Water Street Site Investigation Report, June 2018;

Belaval, M., Boutt, D.F., Schroeder, T., Ryan, P. and J. J. Kim, 2018. Characterizing the groundwater-surface water system in a PFOA-contaminated fractured rock aquifer using radon and stable isotopes. Abstract, NE Geological Society of America Meeting, Burlington, Vermont.

Beven, K. and Germann, P., 2013. Macropores and water flow in soils revisited. Water Resources Research, 49(6), pp.3071-3092.

Bond, D, and Jorja Rose, 2018. Vermont Digger, https://vtdigger.org/2018/05/20/david-bond-jorja-rose-saint-gobains-claims-dont-hold-water/

Chemfab/Saint-Gobain Employee statements regarding disposal at the Bennington Landfill.

Chinkin, 2018, Expert Report of Lyle R. Chinkin, Sonoma Technology, Inc., May 2018

DiSimone,D.J., 2017, Surficial Geologic Map of the Bennington Area, Vermont, Vermont Geological Survey Open File Report VG2017

Freeze A. and J. Cherry, 1979, [Textbook] Groundwater, Prentice-Hall, NY. pp. 558

Golder, 2018, Preliminary Evaluation to Identify Potential PFAS Sources In Corrective Action Areas I and II, Saint-Gobain Performance Plastics, Bennington, Vermont, (Appendix H.1, Barr, 2018b)

Knapp, 2018, Sworn Declaration of Bruce Knapp, 21 May 2018.

Independent Environmental Scientists (IES), 2017a. Perfluorooctanoic Acid (PFOA) Contamination in Groundwater in North Bennington, Vermont.: Prepared for Langrock, Sperry & Wool, LLP., 1 September 2017

Independent Environmental Scientists (IES), 2017b. Sullivan v. Saint-Gobain Performance Plastics Corp.: Expert Report on the Merits. Prepared for Langrock, Sperry & Wool, LLP, 15 December 2017.

C. T. Male, 2017, Final Draft Shallow Soil Sampling Report Former Chemfab Site & Surrounding Areas, 1030 Water Street, Village of North Bennington, Bennington County, Vermont VTDEC SMS Site #20164

Morrissey, D.J., 2018. PFOA in Groundwater in Bennington/North Bennington, Vermont; Prepared for: Saint-Gobain Corporation, Morrissey McDonald Associates, 8 May 2018.

Rao, P. S. C., A. G. Hornsby, and R. E. Jessup, 1985, Indices for ranking the potential for pesticide contamination of groundwater, Soil Crop Sci. Soc. Fla. Proc., 44, 1–8.

Ryan, P.C. Kim, J.J, Norris, E. and D. Allen, 2018. Tracing Groundwater Flow by Inorganic Hydrogeochemistry: A Tool To Understanding PFOA Migration In A Fractured Rock aquifer. Abstract. NE Geological Society of America, Burlington, VT.

Shanley, J.B., Mack, T.J. and J.P. Levitt, 2018. 24-9: Groundwater age-tracers shed light on the nature of PFOA transport in the N. Bennington Vermont Bedrock Aquifer, Northeastern Geological Society of America Meeting, Burlington, VT., March 19, 2018.

Shin, H.M., Vieira, V.M., Ryan, P.B., Detwiler, R., Sanders, B., Steenland, K. and Bartell, S.M., 2011. Environmental fate and transport modeling for perfluorooctanoic acid emitted from the Washington Works Facility in West Virginia. *Environmental science & technology*, *45*(4), pp.1435-1442.

Shin, H.M., Ryan, P.B., Vieira, V.M. and Bartell, S.M., 2012. Modeling the air–soil transport pathway of perfluorooctanoic acid in the mid-Ohio Valley using linked air dispersion and vadose zone models. *Atmospheric environment*, *51*, pp.67-74.

Schroeder, T., Kim., J.J., and P. Ryan, 2018, Widespread PFC Contamination by Aerosol Deposition in Bennington Vermont: I Long Term Problem Because of Retention in Vadose Zone Soils, Northeastern Geological Society of America Meeting, Burlington, VT. March 19, 2018.

USEPA, 1997, PRP lists for Bennington Landfill,

Vermont Property Owners Signed Statements, 2018, Langrock, Sperry & Wool, LLP, 218

VT-ANR, 2016, Potential PFOA Deposition, Bennington, VT. https://anrweb.vt.gov/PubDocs/DEC/PFOA/Consent%20Order%20and%20Technical%20Documents/Core%20Technical%20Documents/Conceptual%20Site%20Model/Saint-Gobain%20VT%20Draft%20CSM%20June2017%20Appendix%20A%20Air%20Deposition%20Modeling.pdf

VT-ANR, 2017, Comments on Draft Conceptual Modeling of Fate and Transport: North Bennington VT., Prepared by Barr Engineering for Saint-Gobain, February 2017.

VT-ANR, 2017b, Pleadings by Agreement, State of Vermont, Superior Court, Bennington Unit: https://anrweb.vt.gov/PubDocs/DEC/PFOA/Consent%20Order%20and%20Technical%20Documents/Consent%20Order/1-20170726%20SG%20Pleadings%20by%20Agreement.pdf

VT-ANR, 2018a, Comments on Draft Interim Conceptual Site Model Report, Bennington, Vermont, Prepared by Barr Engineering for Saint-Gobain Performance Plastics, December 2017, 21 February 2018

VT-ANR, 2018b, Comments on Draft Interim Conceptual Site Model Report Bennington, Vermont, Prepared by Barr Engineering for Saint-Gobain Performance Plastics, February 2017, dated 26 February 2018

VT-ANR, 2018c, Spreadsheet of Results from Residential Well Sampling, March 2018

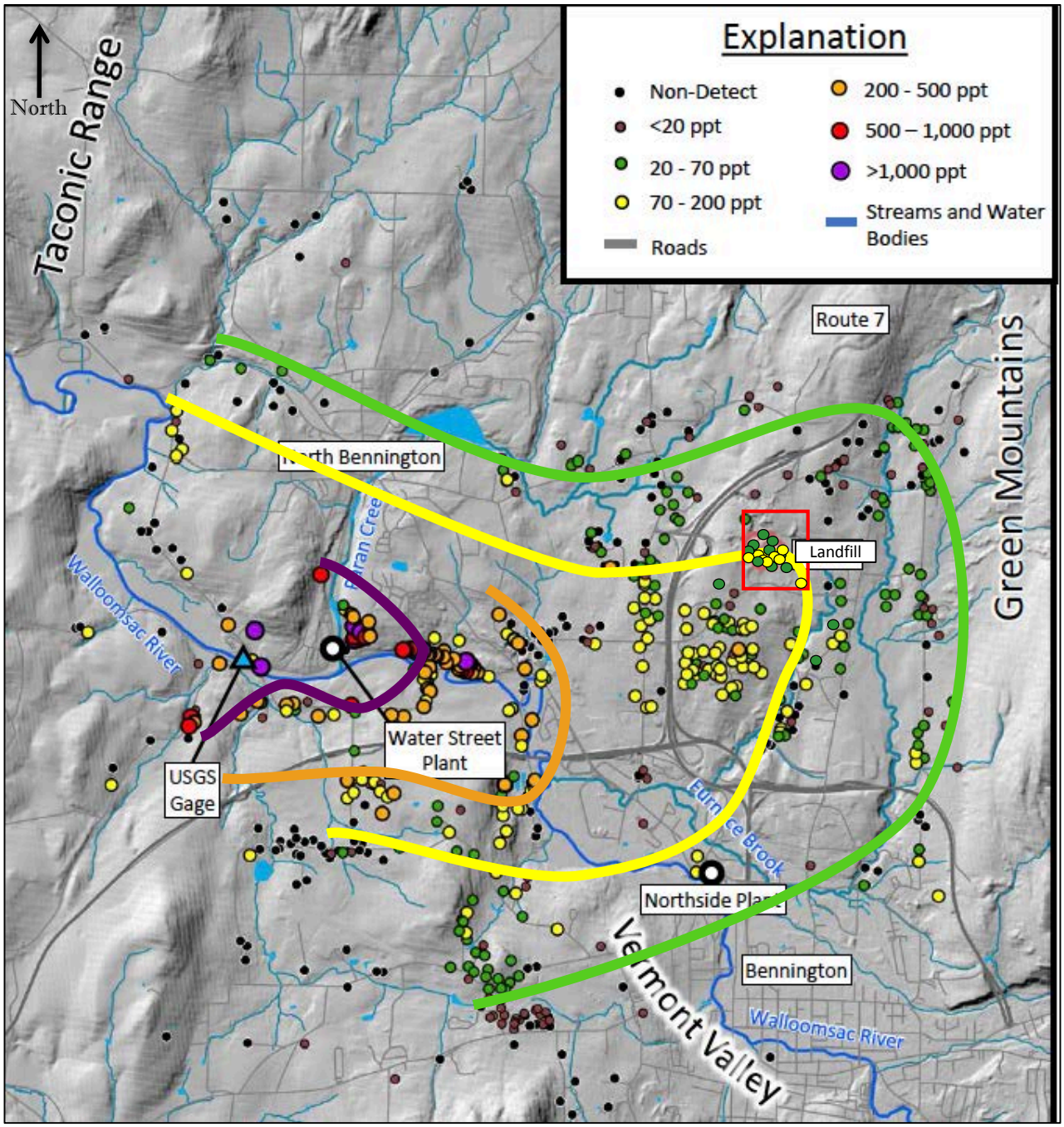
VT-ANR, 2018d, Updated Zone of Contamination Map, 30 May 2018.

VT-DEC, 2018e, Perfluoroalkyl Substances (PFAS) Contamination Status Report, July 2018.

Voss, C.I., 2011. Editor's message: Groundwater modeling fantasies—part 1, adrift in the details. *Hydrogeology Journal*, *19*(7), pp.1281-1284.

Voss, C.I., 2011. Editor's message: Groundwater modeling fantasies—part 2, down to earth. *Hydrogeology Journal*, *19*(8), pp.1455-1458.

Yoder, 2017, Expert Report: Perfluorooctinoic acid Deposition Modeling Analysis in North Bennington, VT, TRM Environmental Consultants, 1 September 2017

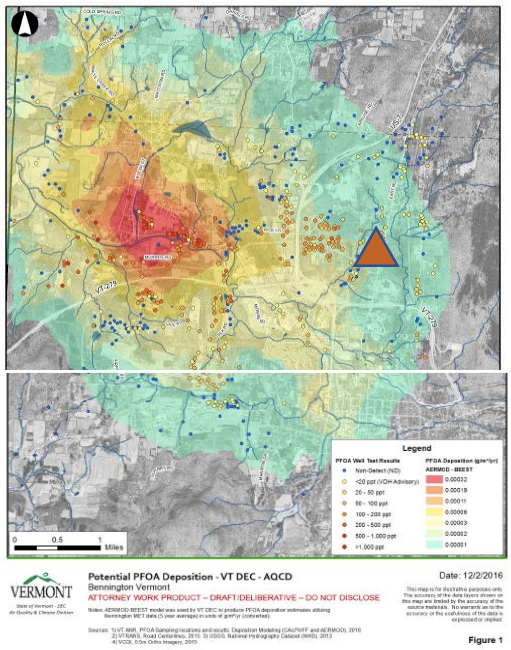


Adapted from: MMA, 2018; Figure 6

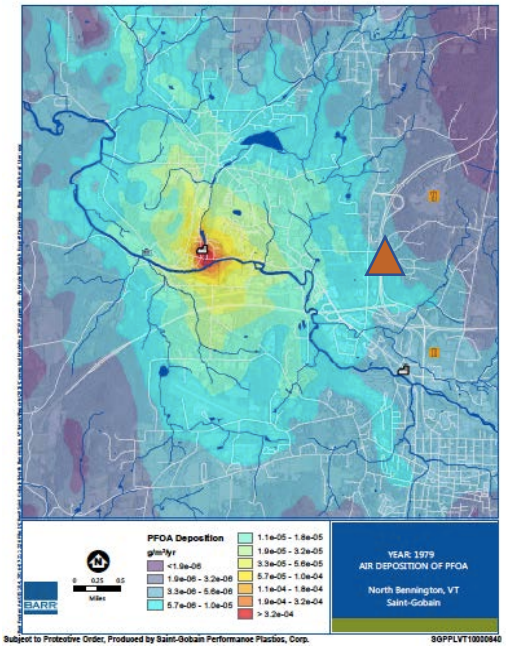
Landfill includes data from Barr, 2018 and Weston, 2017

Figure 1 – Distribution of PFOA in groundwater in the North Bennington/Bennington area adapted from (Morrissey, 2018). Note, the distribution of colored circles purple and red near the Chemfab/Saint-Gobain Water Street plant, trending to orange, yellow and green with distance from the known source at Water Street. Also note that all groundwater samples collected at the Bennington Landfill have concentration represented as green or yellow circles consistent with other concentrations at this location in the plume. Appropriately colored lines added by IES to show the generalized distribution of plume concentrations.

Vermont DEC(2016)



Barr (2017)



Yoder (2017)

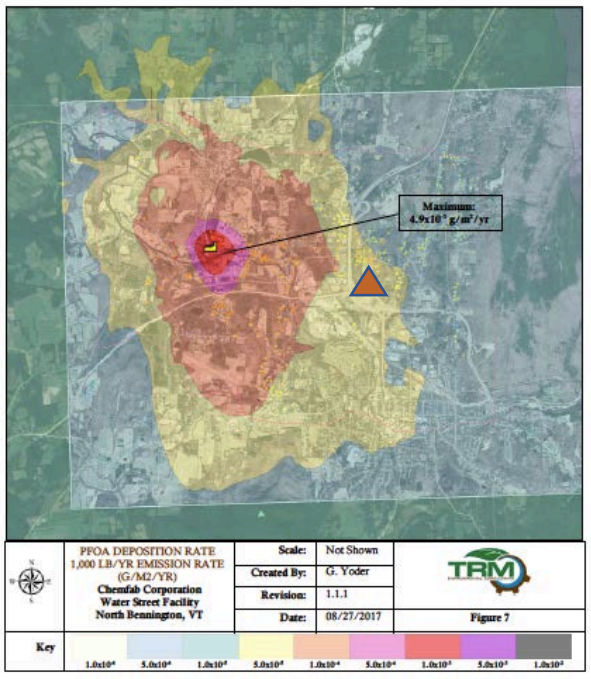


Figure 2 - Three air models show aerial extent and rate of deposition of PFOA plume from emissions from Chemfab/Saint-Gobain Water Street plan. deposition from Water Street Plant. The colors represent average annual deposition rates throughout the North Bennington/Bennington area. Brown triangle marks location of North Bennington Landfill. All models show PFOA deposition on and over the landfill and further to the east. Note, the pattern of PFOA is deposition broadly similar in all three independent models.

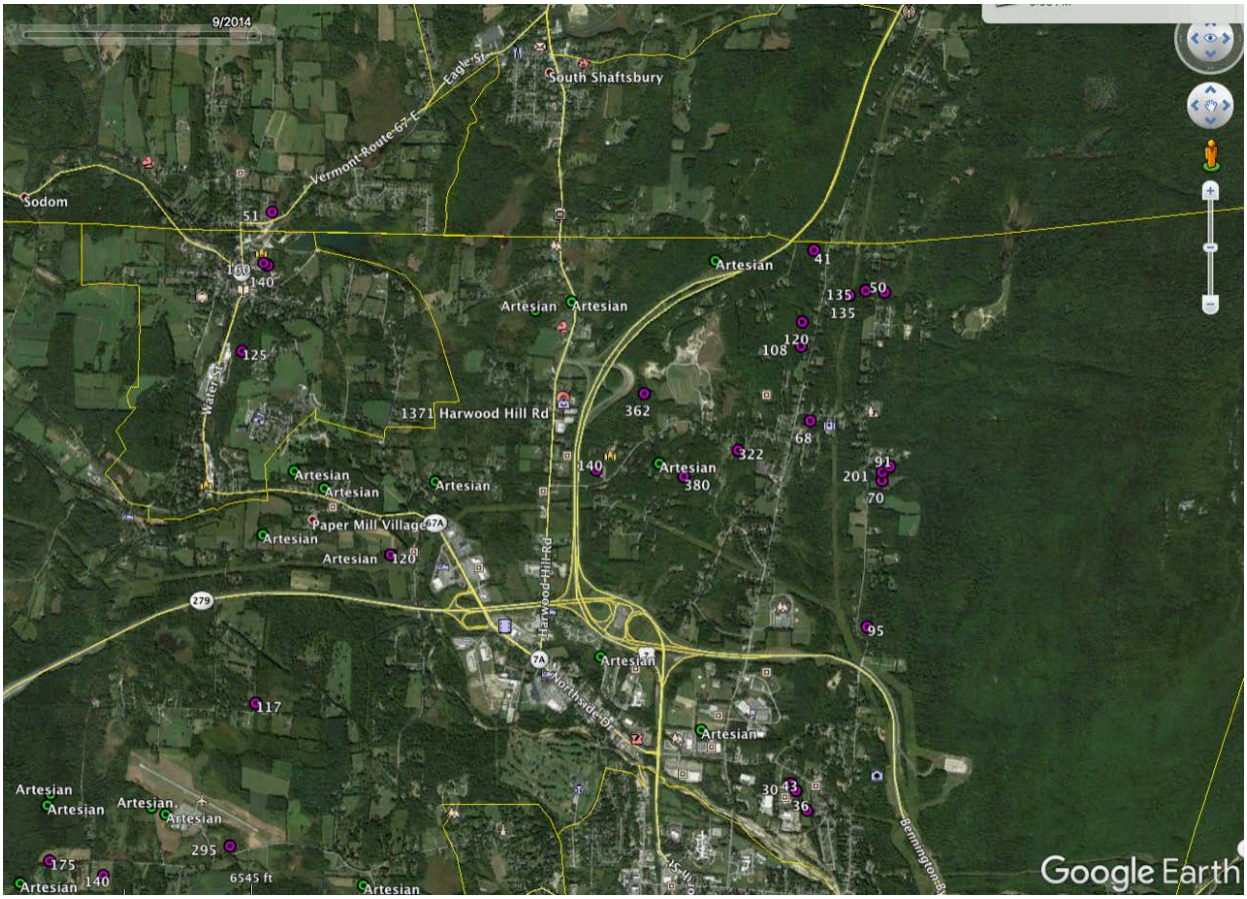


Figure 3 - Locations of artesian wells and sand and gravel wells in the North Bennington area. VT_DEC Website: http://dec.vermont.gov/water/databases/well-completion-reports (accessed 11 November 2017)

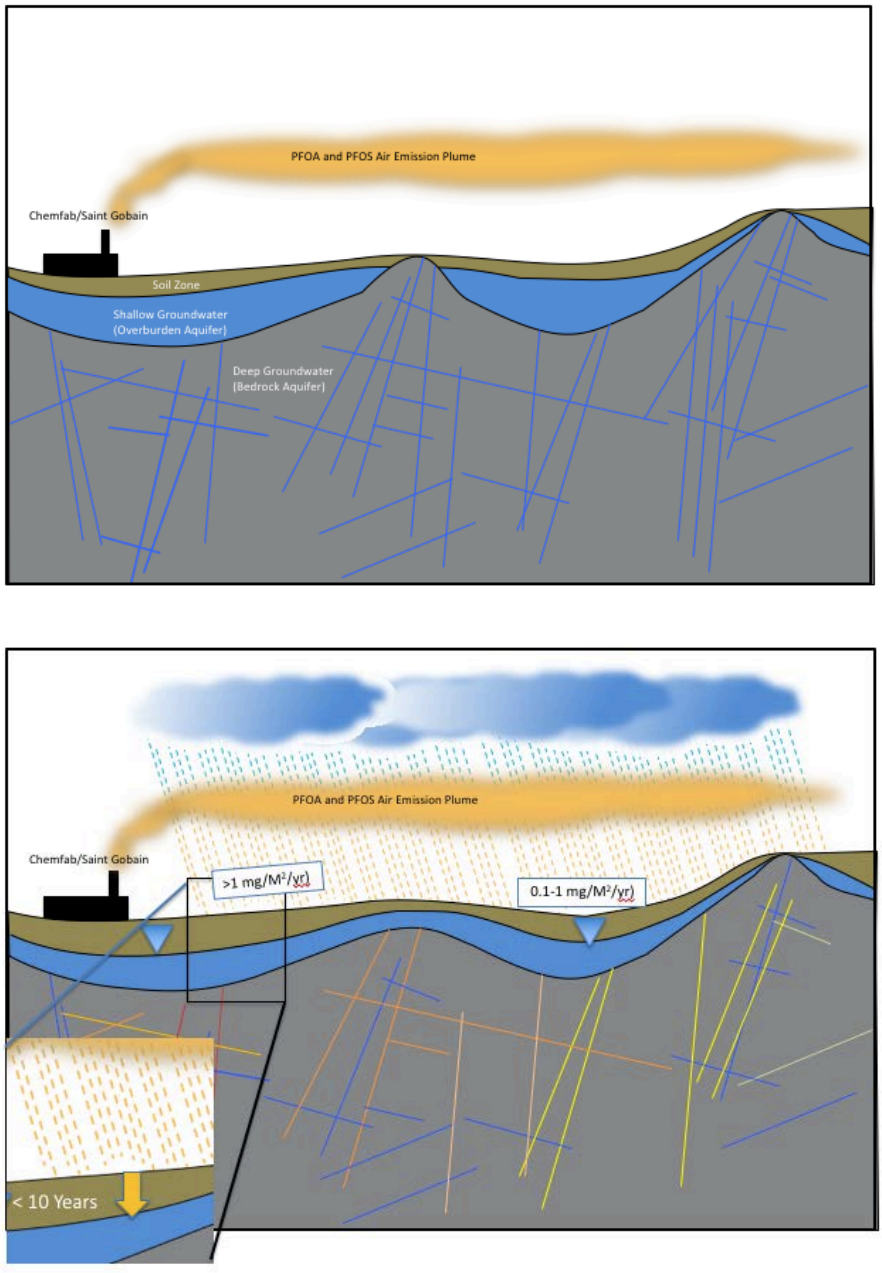


Figure 4 – Visualization of PFOA emission, deposition and contamination of bedrock in North Bennington groundwater. Upper panel reflects onset of emissions and bottom one the nature transport. My calculations show contamination more likely than not reached the water table inside of 10 years, given the vulnerability of the hydrogeologic system to contamination. Note heterogeneity of contamination, with red being the highest concentrations and blue being background. Wells intersect multiple fractures and waters in them mix in the well bore.

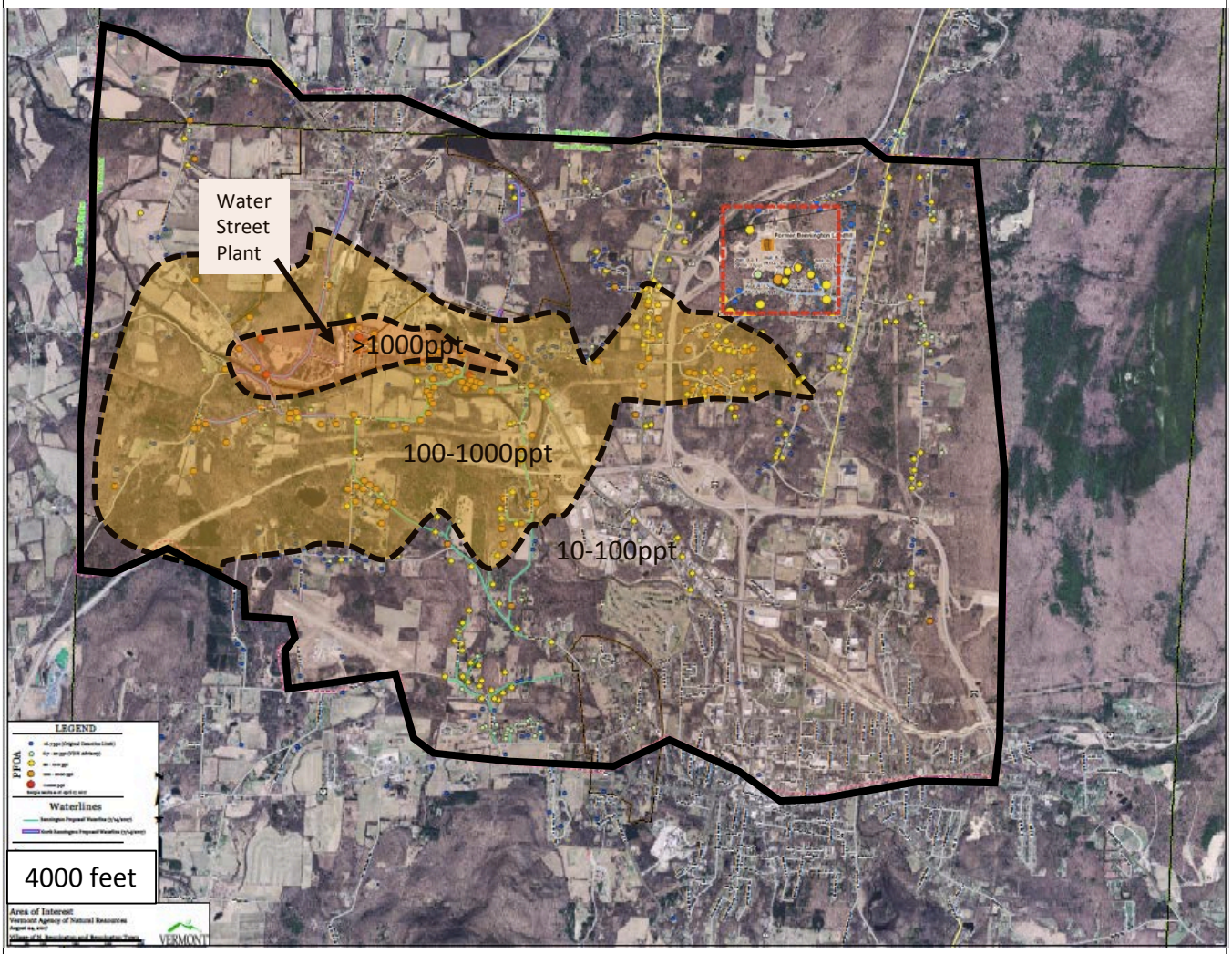


Figure 5 - PFOA in groundwater plume in the North Bennington Area . Concentration ranges in ng/L (Modified from VT-DEC, April, 2017). Bennington Landfill (red box) upper right corner of Zone of Contamination occurs within the Chemfab/Saint-Gobain PFOA plume. Uncertainty remains on how far the groundwater plume extends to the east. Outliers, not unexpectedly, occur and relate to local hydrogeologic conditions. Wells within the Zone of Contamination increase or decrease in concentration of PFOA within the ranges specified in the zones.

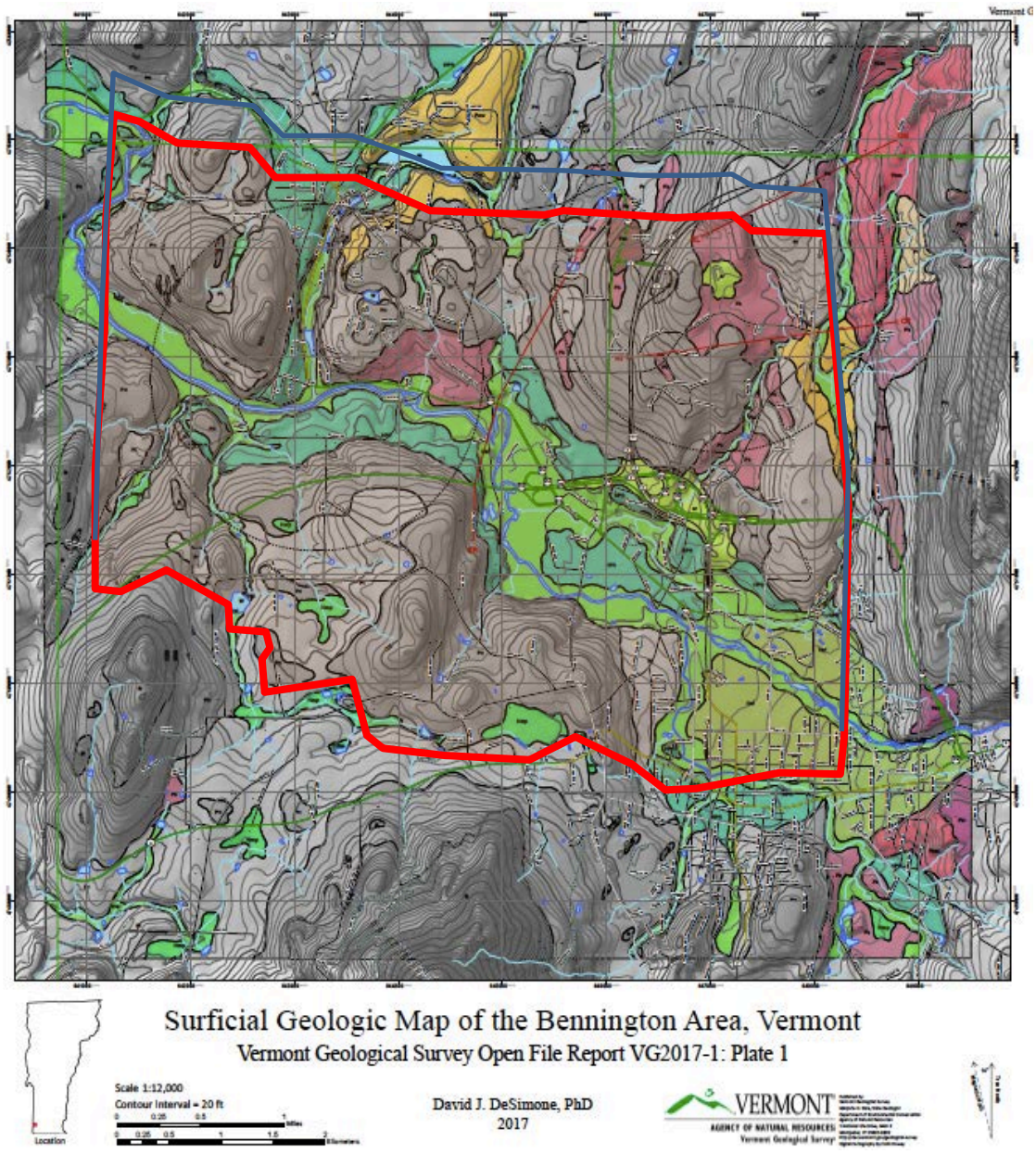
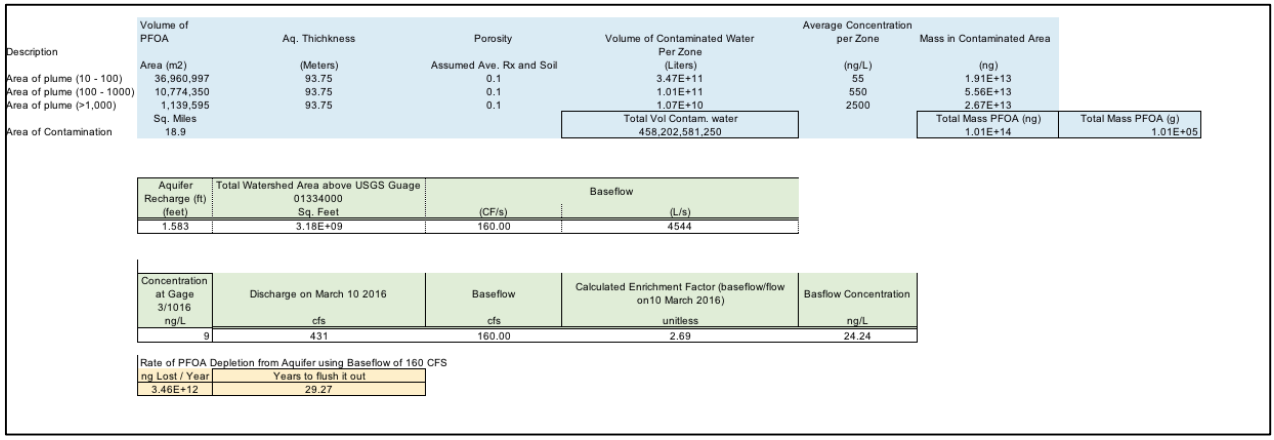


Figure 6 - Superposition of Zone of Contamination (VT-DEC) and surficial geology (DiSimone, 2017)., The green and purple areas (mostly sand and gravel) constitute about 19% of the area.



Description	Volume of PFOA Area (m2)	Aq. Thichkness (Meters)	Porosity Assumed Ave. Rx and Soil	Volume of Contaminated Water Per Zone (Liters)	Average Concentration per Zone (ng/L)	Mass in Contaminated Area (ng)	
Area of plume (10 - 100)	36,960,997	93.75	0.1	3.47E+11	55	1.91E+13	
Area of plume (100 - 1000)	10,774,350	93.75	0.1	1.01E+11	550	5.56E+13	
Area of plume (>1,000)	1,139,595	93.75	0.1	1.07E+10	2500	2.67E+13	
	Sq. Miles			Total Vol Contam. water		Total Mass PFOA (ng)	Total Mass PFOA (g)
Area of Contamination	18.9			458,202,581,250		1.01E+14	1.01E+05

Aquifer Recharge (ft) (feet)	Total Watershed Area above USGS Guage 01334000 Sq. Feet	Baseflow (CF/s)	Baseflow (L/s)
1.583	3.18E+09	160.00	4544

Concentration at Gage 3/1016 ng/L	Discharge on March 10 2016 cfs	Baseflow cfs	Calculated Enrichment Factor (baseflow/flow on10 March 2016) unitless	Basflow Concentration ng/L
9	431	160.00	2.69	24.24

Rate of PFOA Depletion from Aquifer using Baseflow of 160 CFS

ng Lost / Year	Years to flush it out
3.46E+12	29.27

Figure 7 - Calculation of estimated time for PFOA being naturally removed from the contaminated area excluding PFOA remaining in dead pore space that can diffuse out later.

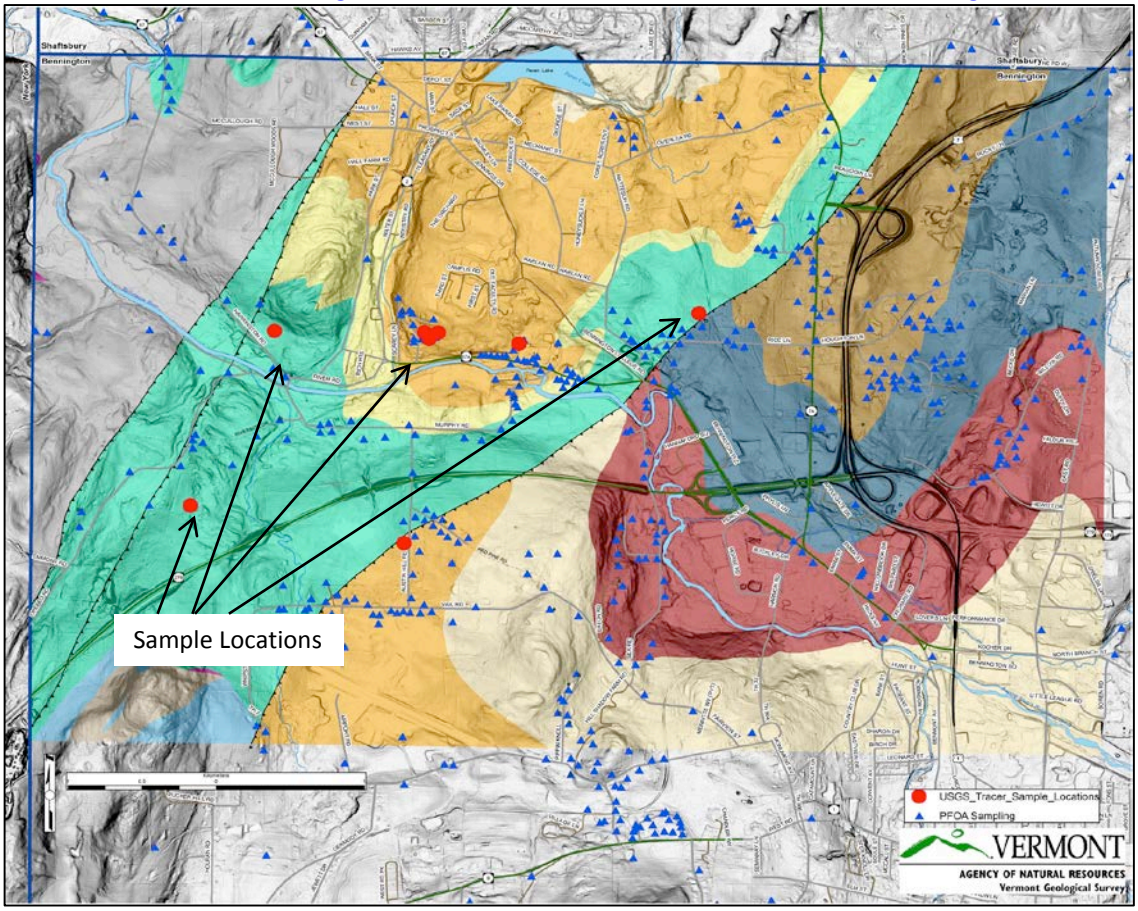


Figure 8a

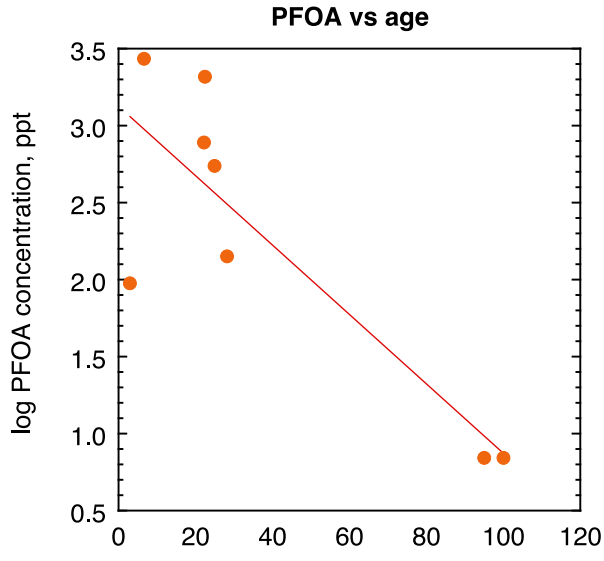


Figure 8b

Figure 8a. Average age of water in domestic wells in North Bennington. Figure 8b – Age of groundwater v. PFOA concentration. (From Shanley, 2018)

EXHIBIT A

Sworn Statement

Name: Sung To Chen DOB: 1.25.69 Telephone: 917-981-5628
Address: 1360 N Bennington Rd
Employer: Sung To Chen

I, _____ give the following statement to Tracy L. Yendell whom I know to be a private investigator currently working for Barr Sternberg

I make this statement of my own free will and accord without threat or promise to me, knowing that this statement can be used in a Court of Law.

I own the property located at 1360 North Bennington Road. I was not aware my property was included in Saint Gobain's list of sources of PFOA that contaminated the groundwater in Bennington and North Bennington. The greenhouse like structure located on the property is an organic garden. I dont use herbicides or pesticides on the property.

I was asked Rachel Strecker to write

I swear that the foregoing statement is true to the best of my knowledge and belief. I make this statement as my free act and deed. Subscribed and Sworn to this 6 day of June 20 18.

Signed _____ Date 6/1/18
Witness Rachel Str Date 6/1/18
Notary Public Tracy L Yendell Date 6/1/18
My Commission Expires: 2/10/19

Sworn Statement

Name: Jonah J. Thiem DOB: 7-10-71 Telephone: 802-442-3625
Address: 155 HAREWOOD HILL RD. BENNINGTON VT 05201
Employer: Ø

I, Jonah Thiem give the following statement to Tracy L. Yendell whom I know to be a private investigator currently working for Barr Sternberg

I make this statement of my own free will and accord without threat or promise to me, knowing that this statement can be used in a Court of Law.

I own i3 imaging. I was not aware my business/property was included in Saint-Gobains list of sources of PFOA that contaminated the groundwater in Bennington and North Bennington. i3 imaging is a sign shop that cuts vinyl and produces graphics. There is no manufacturing. None of the ink used has PFOA, PFOS, PFAS, Teflon or fabric waterproofing treatments. Our well was tested and was found to have PFOA, a water filtration system was installed.

I requested Rachel Strecker write this for me.

I swear that the foregoing statement is true to the best of my knowledge and belief. I make this statement as my free act and deed. Subscribed and Sworn to this 1 day of June 20 18.

Signed Jonah Thiem Date 6-1-18
Witness Rachel Strecker Date 6-1-18
Notary Public Tracy L Yendell Date 6-1-18
My Commission Expires: 2-10-19

Sworn Statement

Name: BRIAN DOXSEE DOB: 5/8/51 Telephone: 802-447-0143
Address: 375 MORSE ROAD
Employer: DOXSEE ROOFING LLC

I, BRIAN DOXSEE give the following statement to Tracy L. Yendell whom I know to be a private investigator currently working for Bart Sternberg

I make this statement of my own free will and accord without threat or promise to me, knowing that this statement can be used in a Court of Law.

I own the property located at 375 Morse Road. I operate Doxsee Roofing. The construction materials located behind our building are slate and rubber roofing materials, which do not contain PFAS. Doxsee Roofing has not used any products containing PFOA, PFAS, PFOS, Teflon or any fabric waterproofing treatments. I was not aware my property was included in Saint-Gobain's list of sources of PFOA that contaminated the groundwater in Bennington and North Bennington.

I requested Rachel Stuecker to write this Statement BD

I swear that the foregoing statement is true to the best of my knowledge and belief. I make this statement as my free act and deed. Subscribed and Sworn to this 1 day of June 2018.

Signed [signature] Date 6/1/2018
Witness Rachel Stuecker Date 6/1/2018
Notary Public Tracy L Yendell Date 6-1-18
My Commission Expires: 2-10-19

Sworn Statement

Name: Shane Bishop DOB: 2/6/61 Telephone: 447-3664
Address: 36 Chapel Rd, Benn. Vt. 05201
Employer: Self

I, Shane Bish give the following statement to Tracy L. Yendell whom I know to be a private investigator currently working for Barr Sternberg

I make this statement of my own free will and accord without threat or promise to me, knowing that this statement can be used in a Court of Law.

I am the owner of Shane's Carpet. I was not aware that my business/property was included in Saint Gobain's list of sources that contaminated the groundwater in Bennington and North Bennington. We are a carpet installation business. We do not use carpet cleaning solutions, stain protectants or water resistant solutions. We have never used products containing PFOA, PFAS, PFOS, Tefion or other fabric waterproofing treatments in the installation of carpets.

Rachel STRECKER wrote this for me

I swear that the foregoing statement is true to the best of my knowledge and belief. I make this statement as my free act and deed. Subscribed and Sworn to this 1 day of June 20 18.

Signed _____ Date 6/1/18
Witness Rachel Str Date 6/1/18
Notary Public _____ Date 6-1-18
My Commission Expires: 2-10-19

Sworn Statement

Name: James Salerno DOB: 01/18/1985 Telephone: 8456411975
Address: 1323 East Rd Bennington VT 05201
Employer: Hale Mtn Research LLC

I, James Salerno give the following statement to Tracy L. Yendell whom I know to be a private investigator currently working for Barr Sternberg P

I make this statement of my own free will and accord without threat or promise to me, knowing that this statement can be used in a Court of Law.

Hale Mtn Research LLC has been present at the above address since April 2016. At no time in our stay here have we used any chemicals, surfactants, compounds, etc. related to the processing or manufacture of Teflon, PTFE, or any other flouropolymer. We are a composites design and prototype shop, we run a 3D printing farm, and we take Environmental Health & Safety very seriously.

I swear that the foregoing statement is true to the best of my knowledge and belief. I make this statement as my free act and deed. Subscribed and Sworn to this 6th day of June 20 18.

JS

Signed _____ Date 6/1/18
Witness Rachel Swift Date 6/1/18
Notary Public Tracy L Yendell Date 6/1/18
My Commission Expires: 2-10-19

Sworn Statement

Name: JOHN M BAKER DOB: 4-17-55 Telephone:
Address: 1023 NORTH BRANCH ST
Employer:

I, JOHN M BAKER give the following statement to Tracy L. Yendell whom I know to be a private investigator currently working for BARRSTERNBERG

I make this statement of my own free will and accord without threat or promise to me, knowing that this statement can be used in a Court of Law.

I was not aware that the sitnspin was included in Saint Gobain's list of potential sources of PFOA. The SitnSpin is a coin operated laundromat. We have not used any products with PFOA, PFOS, Teflon, AFFF or other fabric waterproofing treatments.

I Requested Rachel Stocker weight this statment

I swear that the foregoing statement is true to the best of my knowledge and belief. I make this statement as my free act and deed. Subscribed and Sworn to this 1 day of JUNE 20 18.

Signed John M Baker Date 1-6-18
Witness Rachel Stocker Date 6-1-18
Notary Public Tracy L Yendell Date 6-1-18
My Commission Expires: 2-10-19

Sworn Statement

Name: Ronald C Pembroke DOB: 2/23/1958 Telephone: 802-442-2020
Address: 132 Hannaford Rd N Bennington VT.
Employer: R.C. Pembroke & Sons Inc

I, Ronald C Pembroke give the following statement to Tracy L. Yendell whom I know to be a private investigator currently working for Barr Sternberg

I make this statement of my own free will and accord without threat or promise to me, knowing that this statement can be used in a Court of Law.

I own Pembroke landscaping. I was not aware my business/property was included in Saint-Gobain's list of sources of PFOA that contaminated the ground water in Bennington and North Bennington. We are a landscape construction, planting and maintenance company. We do not use biosolid-containing soil amendments, herbicides or pesticides known to contain PFOA, PFAS, PFOS, Teflon, or fabric waterproofing treatments on the property. The property has a ~~septic~~ well which tested positive for PFOA.

I asked Rachel Smucker to write this statement.

I swear that the foregoing statement is true to the best of my knowledge and belief. I make this statement as my free act and deed. Subscribed and Sworn to this 1 day of June 2018.

Signed _____ Date 6/1/18
Witness Rachel Ow Date 6/1/18
Notary Public Tracy L Yendell Date 6-1-18
My Commission Expires: 2-10-19

EXHIBIT B

UNITED STATES DISTRICT COURT
FOR THE
DISTRICT OF VERMONT

JAMES D. SULLIVAN and LESLIE ADDISON, WILLIAM S. SUMNER, JR., RONALD S. HAUSTHOR, GORDON GARRISON, TED and LINDA CRAWFORD, and BILLY J. KNIGHT, Individually and on behalf of Class of persons similarly situated, Plaintiffs, v. SAINT-GOBAIN PERFORMANCE PLASTICS CORPORATION, Defendant.	Civil Action No. 5:16-cv-000125-GWC

DECLARATION OF BRUCE KNAPP

I, Bruce Knapp, declare as follows:

1. I make this declaration of my own free will, based on my personal knowledge and experience.

2. I currently reside at 137 Horton Hill Road, Shaftsbury, Vermont.

3. I first started working for Chemical Fabrics Corporation ("ChemFab") on January 27, 1970, when I was 19 years old, at its plant at 108 Northside Drive, in Bennington.

4. When I was first hired I worked as a Tower Assistant, but was soon promoted to Tower Operator.

5. I worked at the Northside Drive plant from 1970 until 1978, as a Tower Operator, doing a variety of jobs. We had four towers at the Northside Drive plant.

6. In February of 1978, the plant began to move to 1030 Water Street, in North Bennington. The plant completed the move to North Bennington in October 1978.

7. From 1978 until 2002, I continued to work as a Tower Operator, and then as a Lead Supervisor, at ChemFab's Water Street plant. During this time, we expanded the number of towers to thirteen.

8. In 2000, Saint-Gobain Performance Plastics Corporation ("Saint-Gobain") acquired ChemFab. However, as far as my experience as an employee, the manufacturing work we were doing at the Water Street plant did not change in any significant ways following the acquisition by Saint-Gobain.

9. In 2002, Saint-Gobain closed the Water Street plant, and offered me a job as a Lead Supervisor in its plant in Merrimack, New Hampshire.

10. I accepted the offer, relocated to New Hampshire, and continued working at the Merrimack, New Hampshire, plant as a Lead Supervisor, until my retirement on May 1, 2015.

11. Eight towers were moved from North Bennington to the Merrimack plant, all without the air pollution controls, called abators, that had been used in Vermont.

12. My opinion is that one of the main reasons Saint-Gobain relocated the operations to Merrimack from North Bennington was the Vermont air pollution regulations, which required the use of the abaters on the towers. These were not required in New Hampshire.

13. In or around March of 2015, I met with attorneys for Saint-Gobain at the plant in Merrimack, New Hampshire. They asked me questions regarding procedures for disposal and clean up of chemical waste in the plants at North Bennington and Bennington.

14. During that initial meeting, the attorneys for Saint-Gobain told me that Saint-Gobain had discovered PFOA contamination in well water in Hoosick Falls, New York, and that they were investigating it. They told me not to talk to anyone about this discovery, not even my spouse. They told me that telling anyone about it would not be in anyone's best interest.

15. Since that initial meeting, the attorneys for Saint-Gobain have contacted me several times, by telephone, in person, and by mail. They have asked me questions about how APFO or PFOA was handled and disposed of during my 45 years of employment.

16. During one or more of their visits, the attorneys for Saint-Gobain told me that if subpoenaed or asked to testify, they would represent me. They sent me a "letter of intent," offering to provide me with legal representation free of charge, on the condition that I not speak with anyone suing the company. I have not signed the "letter of intent".

17. I do not want to take sides in any law suit. I only want to tell the truth, to the best of my ability and recollection.

18. While I was employed at ChemFab, and then Saint-Gobain, we manufactured fiberglass and other woven fabric products coated with polytetrafluoroethylene (PTFE, or Teflon™). The manufacturing process involved dipping the fabric in a water-based coating solution, containing the PTFE and dispersants to maintain the PTFE in suspension, and then heating the coated fabrics in a series of heating zones in ovens, to seal the Teflon onto the fabrics.

19. At some point in my career with ChemFab I was aware that APFO was in the PTFE dispersions we received from DuPont and other companies. We also added surfactants which included APFO to the dispersions for certain products depending on the job specifications.

20. During the years I worked at the two Vermont plants, we used many different dispersions and surfactants, and I cannot remember them all. However, I do remember that, among those we used, were the following: T-30, FC-143, and FC-170.

21. I am not aware of any other manufacturing facility in Bennington or North Bennington that coated fabric with Teflon materials during the 45 years I worked for ChemFab and Saint-Gobain.

22. On my very first day at work, in January of 1970, some Teflon materials accidentally splashed onto the cigarette I was smoking. When I got home I got very sick, with what I later learned was "Polymer Fume Fever." It was like the flu, but it did not last long.

23. While I was working at the Northside Drive plant, the exhaust smoke from the heating process was emitted out the company's four smoke stacks, or "towers," directly into the air. Some days the exhaust smoke was very thick inside the plant.

24. When we moved to the Water Street plant, the towers were higher and the exhaust process was slightly better, but we continued to experience exhaust smoke inside the plant over the years.

25. It was my understanding that the APFO was burned off in the heating process, and then emitted up the towers and into the air from the stacks. During my years in Vermont working for ChemFab and then Saint-Gobain, we burned off some amount of surfactants a day but I cannot say how much.

26. We would occasionally receive complaints about the exhaust smoke and odors from the neighbors of the Water Street plant. Part of my job as a Lead Supervisor was to document the neighbors' complaints, check the odors myself, rate the intensity of the odors on a scale from 0 to 10, report what manufacturing processes were running at the time of the complaints, and provide that documentation to my supervisor.

27. At the Water Street plant, we recycled as much of the dispersions as possible. We would dispose of unusable dispersions at the Bennington Landfill, in solid form after using some

type of "speedy dry" or cat litter. We would clean up leaks and spills, and wash them down a sink which was piped to the wastewater treatment plant.

28. After the move to the Merrimack plant, due to concerns about the toxicity and availability of APFO-based dispersions and surfactants, Saint-Gobain reduced APFO from high APFO, to low APFO, to no APFO.

29. A year after my retirement from Saint-Gobain, I was offered the opportunity to have my blood tested for the presence of PFOA. When I received the results, I was upset to learn that the level of PFOA in my blood serum was 1,125.6 μ/l, the highest level of anyone tested in the Bennington/North Bennington area.

I declare under penalty of perjury under the laws of the State of Vermont and the United States that the above is true and correct, and that this declaration was executed on May 21, 2018.

Bruce Knapp

Signed and subscribed to before me on this 21st day of May, 2018.

Notary Public
My commission expires: 02/10/19

753608.1